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Danthonia



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NEWSLETTER OF THE AUSTRALIAN NETWORK FOR PLANT CONSERVATION INC.

Conserving Threatened Plants and Communities in Victoria: The Protected Area Network

Paul Foreman

Conservation Manager, Trust for Nature, Victoria

Today there is growing recognition that plant conservation requires an integrated approach, involving public agencies, private landholders and the wider community. The days of giving responsibility for plant conservation to just one organisation or agency are gone; the issue is far too big and complex. In this article I describe how the Protected Area Network concept is being applied in Victoria to protect vital habitat for threatened species and vegetation communities across tenures.

The nationally endangered subshrub, Dwarf Kurrumbidgee (*Rulingia prostrata* Maiden & Betche) is one species which stands to benefit from this approach. *R. prostrata* is endemic to south-eastern Australia where it is only known from a handful of small populations in Victoria's far east and in NSW, clustering around Newcastle, Penrose and Jindabyne. It is a very seriously threatened species

that has been pushed to the brink largely by habitat loss.

It is a peculiar taxon of the predominantly tropical and subtropical Sterculiaceae, and in Victoria it grows primarily as a creeping prostrate shrub on the margins of ephemeral temperate wetlands dominated by *Lepidosperma* spp. Whilst there are about a dozen records for *R. prostrata* in Victoria, some experts believe there now may only be as few as three extant populations (David Cameron, pers. comm.). The region where it now occurs has been so severely fragmented that landscape level ecological processes have substantially broken down - changes that have already resulted in the extinction of many species and some of the worst outbreaks of dieback in the state. If we are not careful, and this damage is not repaired, threatened species like *R. prostrata* will be 'next in line' for extinction.

(Continued on page 4)

In this issue

Conserving Threatened Plants and Communities in Victoria: The Protected Area Network	1
National Coordinator's report	3
New Commonwealth Legislation: The <i>Environment Protection and Biodiversity Conservation Act</i>	5
Understanding Rarity in a Unique Wattle (<i>Acacia lobulata</i>) in South-western Australia	8
Ecological Restoration in Arid Lands: The Arid Recovery Project	9
International Happenings in Plant Conservation	11

Regular Features

Research Round-up	12
Publications & Information Resources	13
Electronic addresses	15
Conferences	15
Courses/workshops/field work	16
Regional Groups	17

ANPC Inc. Mission Statement

*"To promote and develop plant
conservation in Australia."*

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Contributing to Danthonia

Danthonia is a forum for information exchange for all those involved in plant conservation: please use it to share your work with others. Articles, information snippets, details of new publications and diary dates are all welcome. The deadline for the December 2000 issue is Friday 29th September.

Please send typed or handwritten articles, no more than 2 A4 pages, to Fiona Hall by fax, mail, e-mail, or diskette. If sending by e-mail, please send in the body of the text or as an attachment in Word or Rich Text Format (rtf) to: anpc@anbg.gov.au

Illustrations or logos are always needed too, in the form of clear prints, slides or drawings.

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National Coordinator's Report

Jeanette Mill

Royal Botanic Gardens
Melbourne

26 SEP 2000

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The new ANPC plant conservation email listserver has been a great success. Already over 150 people have subscribed. An average of one message a day has been posted, ranging from enquiries about weed control to announcements about grants, and requests for experts on the world's top 100 invasive species. Several of the messages have prompted an excellent range of responses, and any relevant responses I will post to the list. To subscribe or post anything to the list send a message to: anpc@anbg.gov.au.

Over the last couple of months we have been giving the ANPC website a major overhaul. A new all-singing, all-dancing website will be launched in late September, complete with stunning photos of threatened plants, and even more information about plant conservation in Australia, and overseas. So keep an eye out at www.anbg.gov.au/anpc

Spreading the word

Articles by ANPC have been published in several national and international publications in the last few months, including the inaugural edition of the journal *Ecological Management and Restoration*, and the AMEEF Best Practice 2000 Year Book. The latter can be viewed on the AMEEF website at: <http://www.ameef.com.au/publicat/yearbook/2000/article5.htm#Best Practice: Planting the Seed>

Henry Nix honoured

Professor Henry Nix, founding Chair of the ANPC Advisory Committee and member of the ANPC Management Committee was honoured with an Officer of the Order of Australia award as part of the Queen's Birthday Honours, "for services to the environment, particularly the conservation of natural resources, and to land management through the development and application of simulation models for ecologically sustainable land utilisation." (*The Canberra Times*, 12th June). A photo and article about Professor Nix's award appeared in the *Canberra Times*. Congratulations Henry!

CHABG funding

The ANPC received a grant from the Council of Heads of Australian Botanic Gardens Career

Development Grant Scheme for 1999/2000. Funds will be used to subsidise the participation costs of staff from botanic gardens at ANPC training courses. The ANPC is very grateful to CHABG for its recognition of the ANPC's key role in providing quality plant conservation training.

AGM and committee nominations

Notice of the second ANPC Inc. Annual General Meeting is announced in inserts in this issue. As the two-year term of the first ANPC Inc Committee is almost complete, nominations for Committee members are also being called for in the inserts in this issue of *Danthonia*. These are important ANPC issues, so please read the material. A quorum of 20 is required at the AGM, so your attendance is encouraged. The ANPC constitution can be found on the website at: <http://www.anbg.gov.au/anpc/constitu.html>

Banksia award

WildCare, of which the ANPC Tasmanian Regional Group, the Botanical Guardians, forms a component, won a 2000 Banksia Environment Award in June. This is in recognition of the enormous amount of volunteer time Wildcare and the Botanical Guardians have put into the Tasmanian environment. Just one example of the magnitude of this effort is the removal by the BGs of over 40,000 gorse bushes from Schouten Island.

Call for conference hosts

The next ANPC National Conference will be held in late 2001 or early 2002. We are calling for expressions of interest in hosting the conference. Previous conferences have been held in Canberra, Hobart, Coffs Harbour and Albury/Wodonga, so the next one should be in a region not previously catered for. The 1999 conference was billed as a great success. Hosting the conference in your area is a great way of showcasing the plant conservation work you are involved in, and facilitating vital local, and national, networking. If you are interested in hosting this exciting conference, contact us at the National Office and we can provide you with information about what hosting the conference will involve.

(Continued from page 1)

The Perry River Protected Area Network

The Perry River runs through the centre of the Gippsland Plains of east Victoria. This region is the heartland of the Victorian *R. prostrata* populations and Victorian endangered Red Gum Grassy Woodland habitat that was once widespread across these plains. Trust for Nature (TfN) has a vision of establishing a network of protected land surrounding the Perry River between Stratford and Bairnsdale. TfN is a non-profit and independent conservation organisation whose mission is "to ensure that all significant natural areas in private ownership in Victoria are conserved".

The aim of Protected Area Networks (PANs) is to protect, enhance and restore existing remnants (rather than revegetation), over large tracts of land, strategically linking new with old reserves and establishing a consistent and agreed regime of conservation management across tenure. In this instance, the key mechanisms for affecting change are land purchase and TfN conservation covenants (described below). Over 500 hectares of the best remnants have been purchased and retained by TfN. These will be managed with the assistance of a specially formed management committee consisting of local interested landholders and facilitated and run by TfN.

Although initially, the intent of the PAN project was to help protect the Red Gum Grassy Woodlands, it is now clear that many associated threatened species such as *R. prostrata* will also benefit. For example, TfN has recently obtained funding through the National Reserve System, brokered by TfN Regional Coordinator Robyn Edwards, to purchase some areas of land in the Perry River region on which

two previously unknown *R. prostrata* populations have since been found. Given the size of these new reserves it is possible more populations will be found with further searching.

Along with land purchase, TfN has also been working hard to broker permanent protection on private land via its unique Conservation Covenants. Covenants are agreements with landholders which are placed on land title to ensure long-term conservation and have been so successful that other states are looking to establish similar programs based on the Victorian model. Landholders with Conservation Covenants receive management advice through TfN's stewardship program; regional staff revisit each site at least every three years, and in between people can participate in management field days and workshops, and receive information through bulletins. Stewardship is a very important part of the work, because it demonstrates TfN's long term commitment to each covenanted block.

One of the key implications of the Perry River PAN, and indeed other successful models around the country, such as the Grassy White Box Woodland Conservation Management Network (see *Danthonia* Vol. 8, no. 2, September 1999) across the inland slopes of NSW, is that a more lateral view of reservation systems is required to effect landscape scale change in order to deliver real biodiversity conservation. The Grassy White Box Woodland CMN really leads the way in illustrating what can be achieved in fragmented landscapes over vast scales. This project now has its own coordinator and newsletter to help keep the diverse group of stakeholders focused and informed, and is very



Rulingia prostrata. Source: Walsh, N. and Entwistle, T. (eds). 1996. Flora of Victoria. Vol. 3. Royal Botanic Gardens, Melbourne and Inkata Press. Reproduced with permission.

much where TfN sees its PAN heading.

The recent land purchase is obviously a positive development for *R. prostrata*, but its longer-term conservation is still by no means secured. The next step will be to understand its ecology. For example, it is currently not clear whether *R. prostrata*'s reproductive strategy is linked to the ecology of these tertiary Marine swamps, or whether it is only hanging on in least optimal conditions under the protection afforded by unpalatable perennial sedges. Marshalling the collective know-how and resources of PAN participants to facilitate such ecological research, as well as to implement recommended management, is one of the most powerful and exciting features of this strategy.

Clearly a considerable amount of water must flow under the bridge before this vision is realised, but the Trust is taking the first tentative steps in establishing PANs all over Victoria for a range of ecological communities, especially grasslands, grassy woodlands and associated habitats.

Please contact Trust For Nature if you are interested in getting involved in establishing and growing your local Victorian PAN or would like further information:

Ph: (03) 9670 9933 or freecall 1800 999 933 or visit www.tfn.org.au

Thanks to David Cameron of NRE and Arthur Chapman of Environment Australia for details on *R. prostrata*, and Robyn Edwards for background information.

New Commonwealth Legislation: The *Environment Protection and Biodiversity Conservation Act*

Fiona Hall, Assistant Coordinator, ANPC

On 16th July 2000 the new *Commonwealth Environment Protection and Biodiversity Conservation Act, 1999* (the EPBC Act) came into force, replacing a range of existing Commonwealth threatened species and environment legislation, including the *Endangered Species Protection Act 1992*. In this article I summarise the new Act with particular reference to threatened plant species and ecological communities, and explain where to go for further information. Most of the information for this article has been obtained from the EPBC Act website (details below).

The EPBC Act identifies six 'matters of national environmental significance' that can trigger the Commonwealth Government's involvement in the environmental assessment and approval of proposed actions. These triggers are nationally threatened animal and plant species and ecological communities; World Heritage properties; Ramsar wetlands of international importance; internationally protected migratory species; Commonwealth marine areas; and nuclear actions, including uranium mining.

Any proposed *action* that is likely to have a *significant impact* (see Box for definitions) on any 'matter of national environmental significance' is subject to an assessment and approval process by

either the Commonwealth Environment Minister or by an accredited State process. The EPBC Act also applies to actions that are likely to have a significant impact on the environment of Commonwealth land (even if taken outside Commonwealth land) and actions taken by the Commonwealth that will have a significant impact on the environment anywhere in the world. The list of matters of national environmental significance can be expanded and must be reviewed every five years.

Non-compliance with the Act may attract a civil penalty of up to \$5.5 million or a criminal penalty of up to seven years imprisonment. Liability will be extended to executive officers of corporations in appropriate cases.

Nationally threatened species and ecological communities

Previously, Commonwealth legislation offered limited protection for nationally threatened species and ecological communities outside Commonwealth land. Under the EPBC Act approval will be needed for *all actions* having, or likely to have, a significant impact on nationally threatened species and ecological communities, and is not limited to Commonwealth areas.

Definitions of terms

Significant impact: Administrative guidelines have been developed for determining whether an action has, or is likely to have, a significant impact on a matter of national environmental significance. These guidelines are available in full on the EPBC Act website:

<http://www.environment.gov.au/epbc/>

An action: includes a project, development, undertaking or an activity or series of activities. A decision by a government body to grant an authorisation (eg a permit or licence) or to provide funding is not an action. Actions which have been approved by the Commonwealth or a State before 16 July 2000 will not require assessment or approval.

Extinct: where there is no reasonable doubt that the last member of the species has died.

Extinct in the wild: a species which is known only to survive in cultivation or as a naturalised population well outside its past range.

Critically endangered: A species or ecological community facing an extremely high risk of extinction in the wild in the immediate future.

Endangered: A species or ecological community facing a very high risk of extinction in the wild in the near future.

Vulnerable: A species or ecological community facing a high risk of extinction in the wild in the medium-term future.

Conservation dependent: A species which is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.

Threatened species

The Act creates six categories for the listing of threatened species: extinct; extinct in the wild; critically endangered; endangered; vulnerable; and conservation dependent (see Box for definitions). Extinct in the wild, critically endangered and conservation dependent are all new categories for Commonwealth legislation. Since July 16 the national list of Threatened Species consists of those species previously listed under the *Endangered Species Protection Act 1992*, which is replaced by the new Act. Species will be reassigned to the new categories in the next six months. The list can be found at:

<http://www.biodiversity.environment.gov.au/wildlife/lists/threatsp/index.htm>

An action will require approval from the Environment Minister if it is likely to have a significant impact on a species listed as extinct in the wild, critically endangered, endangered or vulnerable. Whilst 'conservation dependent' species are not matters of national environmental significance, wildlife conservation plans may be developed for species in this category.

The EPBC Act requires recovery plans for all threatened species (except for those which are extinct or conservation dependent). This also includes those species occurring outside Commonwealth areas. All draft recovery plans will be advertised for public comment, and the Minister is required to seek scientific input from the Commonwealth's Threatened Species Scientific Committee, before adopting a plan. A list of recovery plans is available on the EPBC Act website at: <http://www.biodiversity.environment.gov.au/wildlife/plans/recovery/index.html>

Ecological communities

The Act provides for the listing of three categories of ecological communities: critically endangered, endangered and vulnerable (see Box). Under the *Endangered Species Protection Act 1992*, there was only one category - endangered. Any action likely to have a significant impact on an ecological community listed as critically endangered or endangered will require approval from the Environment Minister. However, impact assessment procedures are not triggered for vulnerable ecological communities. Currently only communities in the endangered category are listed at: <http://www.biodiversity.environment.gov.au/wildlife/lists/ecom/index.html>. Communities will be reassigned to the new categories in the next six months.

Through the Act the Minister must now assess all threatened ecological communities recognised by a State or Territory or ANZECC (Australia and New Zealand Environment and Conservation Council) for listing. The Commonwealth must also ensure that recovery plans are prepared for each threatened community for national implementation, either jointly with, or in consultation with, the States or Territories where the community occurs. State plans may be adopted if they meet the standards set out in the Act.

Critical habitat

The Act requires the Minister to establish a publicly-available register identifying critical habitat for all listed threatened species and ecological communities. This may include areas that are necessary for dispersal; succession; to maintain genetic diversity and long term evolutionary development; or for the reintroduction of populations or recovery of the species or community. These habitats are protected on Commonwealth land only, through strong offence provisions and conditions on the sale or lease of Commonwealth property containing critical habitats.

Key threatening processes

Key threatening processes (KTP) can now be listed on solely scientific grounds; a process need only threaten one species or community with becoming threatened or more endangered for it to be potentially listed as a KTP. However, a separate decision will be made as to whether to require a threat abatement plan for a key threatening process if the Environment Minister considers that a plan will be a "feasible, effective and efficient way to abate the process".

Anyone can nominate a native species, an ecological community or a threatening process to be included in a list or a particular category of a list. The Act's regulations, available at the EPBC Act home page (listed below), outline how nominations can be made.

Environmental database

The Environment Protection and Biodiversity Conservation Database is now available online at: <http://www.environment.gov.au/epbc/db/index.html> to help people understand the Act. It allows mapping of an area of interest – such as a development project; identify and overlay places of national environmental significance; to find where nationally threatened species and ecological communities occur; what development projects have been

proposed, and their status. It also allows an online interview to apply for a permit or referral application.

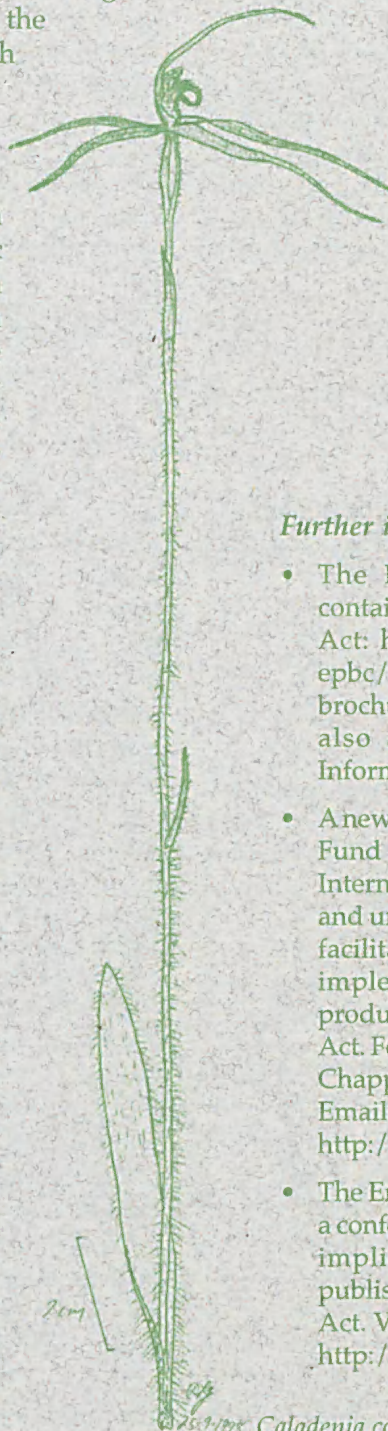
According to the Environment Australia fact sheet about this database, it "represents the baseline of our scientific knowledge on the distribution of threatened species – the first time such a consolidated national base has been put together." The EPBC Act website also contains lists of public notifications and invitations to comment on proposed projects, as well as projects which have been referred and are being assessed:

<http://www.environment.gov.au/epbc/projects/projects.html>

Finally, Environment Australia is inviting applications for people to be placed on its Consultation Register for consultation on applications to take or kill listed threatened species and ecological communities. Contact Corena Sloper at EA for a registration form on: Tel: (02) 6274 1111
email: corena.sloper@ea.gov.au

Further information

- The Environment Australia website contains plenty of information about the Act: <http://www.environment.gov.au/epbc/index.html>. Free public information brochures and fact sheets about the Act are also available from the Community Information Unit on: 1800 803 772.
- A new EPBC Unit set up by the World Wide Fund for Nature and the Humane Society International aims to promote knowledge and understanding of the EPBC Act and to facilitate community involvement in the implementation of the Act. They have produced a series of fact sheets about the Act. For further information contact Sophie Chapple at WWF. Tel: (02) 6257 4010
Email: schapple@wwf.org.au or visit: <http://www.hsi.org.au/epbcunit.html>
- The Environmental Defender's Office held a conference last year on the environmental implications of the Act, and has also published their various comments on the Act. Visit their page at: <http://www.edo.org.au/alerts.htm>



Caladenia concolor: a nationally threatened plant.
Illustration: David Jones

Understanding Rarity in a Unique Wattle (*Acacia lobulata*) in South-western Australia

Marcelle Buist, Margaret Byrne and Colin Yates

CALMScience, Department of Conservation and Land Management, Perth, Western Australia

Acacia lobulata Cowan & Maslin is Declared Rare Flora currently ranked as critically endangered under the Western Australian *Wildlife Conservation Act, 1950*, as well as being listed nationally as endangered. This rare wattle is known from three populations within a 50 km radius of one another in the north-eastern wheatbelt of south-western Australia. It was first collected by Judith Harvey and Andy Williams in 1982, subsequently documented by Arthur Weston in 1985 during botanical surveys of the area and then described by Richard Cowan and Bruce Maslin from the Department of Conservation and Land Management in 1990 (Cowan and Maslin, 1990). The taxon is unique, being the only species of *Acacia* in Australia that has terete phyllodes with reticulate nervature (see illustration).

Acacia lobulata is an erect, open and often spindly shrub, 1-2 m high, occurring in *Eucalyptus capillosa*

woodlands and tall *Melaleuca uncinata* shrubland. It is restricted to gritty kaolinitic loams associated with areas adjacent to granite inselbergs and the mid to lower levels of lateritic breakaways. Of the three known populations, two occur in nature reserves, where plant numbers exceed 5000, while the third occurs on a shire road reserve extending into adjacent private property and comprises less than 100 plants. Consequently, the taxon has a highly restricted distribution but is locally abundant. All populations show an absence of recruitment.

Flora conservation research being undertaken within the Department of Conservation and Land Management is using genetic and ecological techniques to determine the causes of rarity of *A. lobulata* with a view to developing management guidelines which may also apply to other rare species. The genetic study has shown that *A. lobulata* is not closely related to its presumed nearest relative, *Acacia verricula* (Section *Plurinerves*) despite its morphological similarity. Moreover, the genetic study suggests that *A. lobulata* has been isolated from other *Acacia* species since before the Pleistocene era and possibly for at least three million years (Byrne *et al.*, 2000). This, together with its level of genetic diversity and its restriction to mesic habitats adjacent to granite outcrops, suggests that *A. lobulata* is a relictual species that has persisted through geological time (Byrne *et al.*, 2000).

Clearly *A. lobulata* has great conservation significance and is an important part of south-west Australia's remarkable evolutionary and wildflower heritage. However, little is known about the ecological interactions that affect the dynamics of populations. As a consequence there are few scientific guidelines for managing the remaining populations. Research being undertaken by the Department of Conservation and Land Management will provide this important information and assist in the development of a recovery plan. This research is investigating the biological and physical interactions that affect pollination, seed production, seed dispersal, seed germination and seedling growth and survival. In addition the co-occurring and widespread *A. verricula*, has been included in the study for



Acacia lobulata is characterised by terete phyllodes with reticulate nervature. (Illustration by J. Rainbird for publication in *Flora Australia* Volume. 11 and the accompanying WATTLE CD).

comparative purposes to determine whether there is anything intrinsic about *A. lobulata*'s reproductive biology and ecology which may be contributing to its rarity.

Until the above information is available there are several clear management imperatives. Firstly, fire needs to be excluded from the existing populations until more is known about the species' response to burning, and secondly, *ex situ* collections of seeds need to be maintained as a safeguard against the loss of the wild populations. Seed collections from the two nature reserve populations have been placed in long term storage at the Department of Conservation and Land Management's Threatened Flora Seed Centre.

The primary author is seeking volunteers to help with survey and monitoring work. For more information contact her at:

CALMScience, WA Herbarium, Locked Bag 104, Bentley Delivery Centre, WA 6983.

Email: marcelleb@calm.wa.gov.au

References

Byrne, M., Tischler, G., Macdonald, B., Coates, D.J. and McComb, J. (2000). Phylogenetic relationships between two rare *Acacias* and their common widespread relatives in south western Australia. *Conservation Genetics*, submitted.

Cowan, R.S. and Maslin, B.R. (1990). *Acacia* Miscellany 1. Some oligoneurous species of *Acacia* (Leguminosae: Mimosoideae: Section *Plurinerves*) from Western Australia. *Nuytsia* 7: 183-199

Ecological Restoration in Arid Lands: The Arid Recovery Project

Katherine Moseby, Project Coordinator

Since European settlement the arid land around Roxby Downs in northern South Australia has undergone severe and dramatic change. Over 60% of the local mammal fauna has been lost, the native vegetation has been degraded through years of damage by introduced rabbits and stock, and cats and foxes continue to threaten local bird and reptile species. The Arid Recovery Project, a joint initiative between WMC Resources, the local community, National Parks South Australia and the University of Adelaide, aims to address these issues by restoring 60 square km of arid land by removing introduced cats, rabbits and foxes, regenerating native plants and re-introducing locally extinct species. Part of the long-term management plan is to reintroduce the parasitic Sandalwood, *Santalum spicatum*, back into the area.

The project area is 5km north of the WMC-owned Olympic Dam mine and metallurgical plant. Habitat types include longitudinal sand dunes separated by up to 1km of chenopod (bluebush/saltbush) swales (the low areas between dunes). Patches of Mulga woodland and Canegrass swamps also dot the landscape. The main vegetation on the dunes includes Hopbush (*Dodonaea viscosa*) and Umbrella Wattle (*Acacia ligulata*) with patches of Bullock Bush (*Alectryon oleaefolius*) and Native Pine (*Callitris glaucophylla*).

Since its initiation in 1997 the project has fenced 30 square km and removed all rabbits, cats and foxes. Over 100 plant and animal monitoring sites have been established and Greater Stick-nest Rats (*Leporillus conditor*), Burrowing Bettongs (*Bettongia lesueur*), and Greater Bilbies (*Macrotis lagotis*) have been re-introduced.

The project is strongly research based, with university students assisting with plant and animal research. Below I describe the project's vegetation research.

Vegetation monitoring

Our vegetation monitoring program consists of two elements:

1) Baseline monitoring: to provide a baseline for monitoring vegetation recovery following the removal of rabbits and stock, as well as the impacts of reintroduced fauna species. Rabbit densities at Roxby Downs reached over 600 per square km before Rabbit Calicivirus Disease (RCD) reduced populations to less than 20 per square km in late 1996, early 1997. Other impacts on vegetation included cattle grazing, as well as the removal of Native Pines and Mulga to build the nearby dingo fence. Damage to the local vegetation was evident through grazing lines on most large shrubs and

trees, a lack of seedlings of long lived perennial species, large bare scalded areas on swales, bare mobile dune crests and very low levels of grass cover. One plant which has been virtually entirely removed from the area is the Sandalwood (*Santalum spicatum*), harvested extensively for incense late last century.

The baseline monitoring program was established with the assistance of the Pastoral Management Branch of the S.A. Dept for Environment and Heritage. Twenty-four sites were chosen, 12 inside the reserve area and 12 control sites in areas where rabbits are still present. The sites are well matched with very similar levels of cover and recruitment. Monitoring techniques include a photopoint, a 100m Jessop transect to measure recruitment of perennial species, a species list and a step point transect to measure vegetation cover. Sites are visited each year in August, and already seedlings of many perennial species have been recorded inside the fence, including Mulga (*Acacia aneura*), Bullock Bush (*A. oleafolius*), Native Plum (*Santalum lanceolatum*), *Senna artemisoides* and *Hakea leucopetra*.

2) Impact of re-introduced animals: The Greater Stick-nest Rat was re-introduced to the project area in 1998 and cafeteria trials (where different varieties of foods are offered and the preferences recorded) and observation were used to compare the diet of the rats with rabbits. The study found that while both species are herbivorous, rabbits favoured grasses and perennial species whilst the rats feed predominantly on chenopod species with high water content. One of their most favoured species is *Gunniopsis quadrifida*, a relatively uncommon chenopod in the study area found at the base of dunes. Observations showed that rats were grazing heavily on this species, often completely defoliating the juvenile plants. In 1999, four exclosures were constructed around patches of *Gunniopsis* adjacent to control unfenced patches. Annual monitoring of the recruitment and foliage density of the plants is being

conducted. Exclosures have also been erected in areas of high rat density which include highly preferred habitat types, such as Mulga woodland with thick understorey of Spiny Saltbush (*Rhagodia spinescens*), swale areas with Cottonbush (*Maireana aphylla*) and dune base habitat with Saltbush (*Atriplex vesicaria*) understorey. Changes in the vegetation cover, structure and foliage density of these exclusion areas are being compared to control areas where rats are present.

Scat analysis of the Stick Nest Rats and recently reintroduced Bilbies and Burrowing Bettongs is being used to ascertain what plant species they are feeding on, and further studies are also being initiated into the impacts and diet preferences of the Bilbies and Burrowing Bettongs.

A Greencorps team has begun mapping the vegetation of the entire enclosure, and has found a number of plant species previously unrecorded on the site. Preliminary results from the vegetation mapping indicate that the highest density of Stick Nest Rats appears to correlate with the highest diversity of vegetation, and further research is being conducted.

The success of the project can be attributed to the broad-based support received from numerous organisations and the large number of volunteers

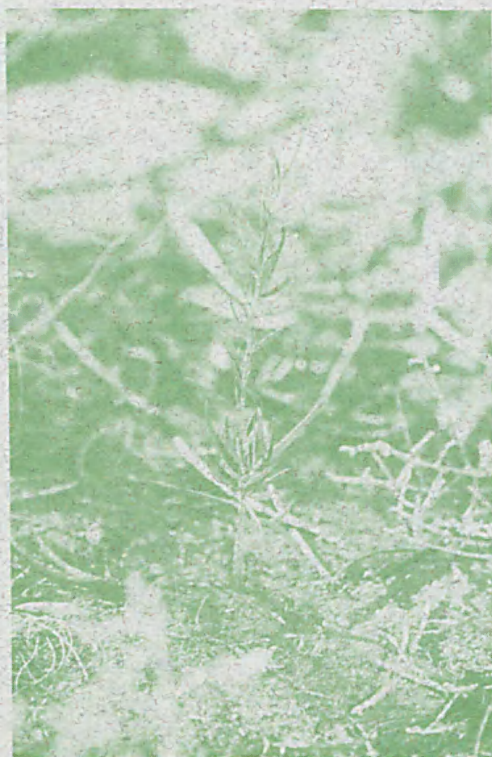
who assist the project. Over 10,000 hours of volunteer time have been donated to date. Contributing organisations include the Natural Heritage Trust, WWF, Aboriginal Lands Trust, SA Department of Primary Industries, Nature Foundation SA., Green Corps, Australian Trust for Conservation Volunteers and the Wildlife Conservation Fund.

Any readers interested in assisting the Arid Recovery Project with monitoring or research should contact the project coordinator. The project is able to provide food and accommodation.

Contact Katherine Moseby on
Tel: (08) 8671 8282.

Email:

Katherine.Moseby@wmc.com.au



A regenerating Mulga seedling.
Photo: Courtesy of WMC Resources

International Happenings in Plant Conservation

Associate Professor David R. Given
International Centre for Nature Conservation
Lincoln University
New Zealand

Continuing his reporting on international happenings in plant conservation (see the last issue of *Danthonia*), David Given, ANPC's Vice-President, summarises the latest events.

In my last report I mentioned *The Global Strategy for Plant Conservation*, the outcome of a workshop in early April 2000 in Las Palmas, Canary Islands, Spain, attended by 16 global plant conservation experts representing 13 countries and a range of institutions including botanic gardens, universities, inter-governmental agencies and national biodiversity programs. Now known as *The Gran Canaria Declaration: a global programme for plant conservation*, the strategy has been tabled at the Conference of Parties to the Convention on Biological Diversity (Nairobi, May 2000) and is now on the work program agenda for the Convention (see the COP Decision statement at <http://www.biodiv.org/Decisions/COP5/html/COP-5-Dec-10-e.htm>). The Declaration is also the subject of a resolution to be put to the forthcoming World Conservation Congress, to be convened by IUCN, in Amman, Jordan in October 2000. See the last issue of *Danthonia* (Vol. 9(1), June 2000) for a summary of the Declaration, and to obtain a copy of the Declaration contact Botanic Gardens Conservation International (email: bgci@rbgkew.org.uk).

In late June the 7th meeting of the Species Survival Commission Plant Conservation Committee was held in Atlanta, USA, hosted by the Atlanta Botanic Gardens. This was a consolidation meeting to finalise a five year SSC Strategic Plan for Plants and to set the framework for a number of projects which will be a focus point for the program, especially working through geographic areas of importance for plant conservation. The SSC meeting also discussed on-going plans for advancing the *Gran Canaria Declaration*, and its long-term implications. Geographic areas, red listing, medicinal plants, and facilitating training and communication were seen as some of the primary outcomes of a strategy, especially through alliances and partnerships. Specialist groups such as ANPC are vital for achieving the goals which

have been set.

From Atlanta about 10 of the SSC group travelled north via the spectacular mountains of Georgia and North Carolina to Asheville and the International Botanic Gardens Congress (<http://www.ncarboretum.org/congress2000/congress.htm>). The Congress, with a theme of 'partnerships within and beyond the gardens', was attended by over 1000 delegates. It was a very full program of concurrent sessions, with outstanding plenary keynotes given each morning, and featuring among others, Christian Samper (Colombia), Peter Raven (USA), and Brian Huntley (South Africa).

The World Conservation Congress of IUCN in Jordan in early October will be a key event for conservation. The Congress is the major three to four yearly overall meeting of IUCN, and the overall theme is 'Ecospaces'. The program will include Commission meetings (including SSC), special interest workshops on a wide range of subjects, and plenary sessions to elect Council and Commission chairs for the new triennium as well as considering resolutions on conservation issues. Congress website: <http://www.iucn.org/amman/index.html>

Are You Networked for Plant Conservation?

The new ANPC plant conservation email list is going from strength to strength with over 150 subscribers already and much positive feedback. Add your name to the list to hear about plant conservation initiatives at home and overseas, grant application deadlines, conferences, workshops, fieldwork, etc. and to exchange plant conservation information with others.

To subscribe or post a message,
send an email to:
anpc@anbg.gov.au



Research Round-up

This page aims to bring to the attention of plant conservation practitioners relevant recently published and on-going research that might inform their work. Contributions to this page are welcome, as are comments about how we can make it more useful to you.

Rehabilitation & Remnant Vegetation Management

- Linkage Restoration: Interpreting fragmentation theory for the design of a rainforest linkage in the humid Wet Tropics of north-eastern Queensland. Nigel Tucker. *Ecological Management & Restoration* 1(1): 35-41. April 2000. This paper reviews the potential problems with linkages and examines some of the strategies adopted in a linkage restoration project on the Atherton Tableland. The author can be contacted at CTR@env.qld.gov.au

- Effect of fire on the topsoil seed banks of rehabilitated bauxite mine sites in the jarrah forest of Western Australia. Martin Smith et al. *Ecological Management & Restoration* 1(1): 50-57. April 2000.

Germinable seed stores of five and eight year-old rehabilitated bauxite mine pits in south-west Western Australia were assessed before and after burning. Results indicate that it is not appropriate to introduce fire to rehabilitated areas before eight years.

Primary author can be contacted at the Dept. of Botany, University of Western Australia, Nedlands, WA 6907.

- Recent directions in native vegetation establishment and rehabilitation of minesites in the eastern states of Australia. Sean Bellairs and Melina Gillespie. Note in *Ecological Management & Restoration* 1(1):72-73. Contact authors at: S.Bellairs@mailbox.uq.edu.au

- Terry Coates of the Royal Botanic Gardens, Melbourne has been coordinating research including the use of smoke water for the revegetation of heathland (info from the *Ecological Society of Australia Bulletin*). Visit the RBG Melbourne website for information and contact details: <http://www.rbgmelb.org.au/>

- The significance and weed management of temperate native grasslands and box grassy woodlands in South Australia. Richard Davies. In: *Balancing Conservation and Production in Grassy Landscapes. Proceedings of the Bushcare Grassy Landscapes Conference*. Clare, South Australia 19-21 August 1999.

Contact the author: Richard Davies, School of Biological Sciences, Flinders University, GPO Box 2100, Adelaide, 5001 SA.

Email: Richard.Davies@flinders.edu.au

Species-specific Research

- Neville Walsh, Liz James and Terry Coates of the Royal Botanic Gardens, Melbourne, have been researching the distribution, abundance and ecological condition of the shrub *Acacia phlebophylla*, a species endemic to Mt Buffalo (info from the *ESA Bulletin*). Visit the RBG Melbourne website for more information and contact details: <http://www.rbgmelb.org.au/>

Plant Conservation Genetics

The *Australian Journal of Botany* (vol. 48, no. 3, 2000) is a Special Issue on Genetics and Conservation of Australian Flora. Abstracts and full papers can be viewed on the journal's website at <http://www.publish.csiro.au/journals/ajb/recent/recent.html>. Papers include:

- Achieving practical outcomes from genetic studies of rare Australian plants. P. Hogbin, R. Peakall and M. Sydes.
- How well do phylogenetic studies inform the conservation of Australian plants? Stephen Hopper.
- Defining conservation units in a rich and fragmented flora: implications for the management of genetic resources and evolutionary processes in south-west Australian plants. David J. Coates.
- Genetic systems in the south-west flora: implications for conservation strategies for Australian plant species. Sidney H. James.
- Patterns of mating in *Persoonia mollis* (Proteaceae) revealed by an analysis of paternity using AFLP: implications for conservation. Siegfried L. Krauss.
- Morphological and genetic variation in the endangered Victorian endemic grass *Agrostis adamsonii* Vickery (Poaceae). EA. James and AJ. Brown.

Grassy Ecosystem Grants

The grassy ecosystems grants partnership is an initiative of WWF and the Natural Heritage Trust Bushcare Program, funded by Environment Australia. It focuses solely on the conservation and management of grassy ecosystems in SE Australia. This scheme aims to provide funding to:

- Increase protected grassy ecosystems on private lands
- Increase the number of cooperative land management agreements with public authorities
- Increase application of best management practices
- Increase community involvement in the management of grassy ecosystems
- Generate knowledge of the distribution and conservation status of remnant sites, particularly on private land.

The 2000 application round opened on 4th August, and applications close on 13th October. Contact Pip Walsh or Wendy Godden for more information on Tel: (02) 9281 5515.

Publications & Information Resources

Endemic plants of the Chatham Islands

Phillipa Crisp, Colin Miskelly and John Sawyer, New Zealand Department of Conservation. 2000

This new colour book describes the 42 endemic vascular plant species of the Chatham Islands, and includes distribution maps and colour photographs of each endemic species.

The book will be used to promote conservation of the Chatham Island endemic vascular plant species (and their associated plant and animal communities) and to monitor changes in their condition and status. Copies of the book are available (price NZ\$20) from:

John Sawyer, Biodiversity Technical Support Officer, Department of Conservation, Wellington Conservancy, PO Box 5086, Wellington, New Zealand. Tel: (04) 470 8427; Fax: (04) 499 0077. Email: jsawyer@doc.govt.nz.



Threatened Plants: Active Bushcare

Edited by J. Playford and R. Murray. 2000

Contains chapters by experts on the political, biological and practical components of threatened plant conservation in Queensland. Also includes requirements for the organisation and management of recovery teams and specific issues such as population enhancement and genetic concerns. Provides practical information on propagation,

Sporodanthus traversii, one of the 42 vascular plants endemic to the Chatham Islands. Illustration: Catherine Beard

conservation together with other land uses, along with suggestions for involving the community, obtaining grants and monitoring the success of conservation projects.

\$16.50 plus \$5 postage and handling. Available from

the Centre for Conservation Biology, the University of Queensland, Brisbane 4072. Tel: +61 (7) 3365 2527; Email: ccbinfo@ccb.uq.edu.au
Web: <http://www.ccb.uq.edu.au/>

The Ecology, Biology and Conservation of Threatened Phebalium Species in South Australia

Dr Manfred Jusaitis.

Plant Biodiversity Centre. 2000

This reports on research conducted into the biology and ecology of five threatened species of *Phebalium* occurring in South Australia (*Phebalium brachyphyllum*, *P. equestre*, *P. hillebrandii*, *P. glandulosum* subsp. *glandulosum* and *P. lowanense*). It describes techniques for propagation of each species, as well as including management recommendations for each species to aid the development of recovery guidelines.



Available free of charge from the author at: Conservation Biology Unit, Plant Biodiversity Centre, Hackney Road, Hackney, SA 5069. Ph: (08) 8222 9306; Fax: (08) 8222 9353

Email: mjusaitis@deh.sa.gov.au

Phebalium brachyphyllum.

Illustration: Gilbert Dashorst

Temperate Eucalypt Woodlands in Australia: Biology, conservation, management and restoration

Edited by Richard Hobbs and Colin Yates. 2000

A comprehensive account of the biology, conservation, management and rehabilitation of one of the most important broad-vegetation types in Australia. Chapters cover a wide range of issues, such as tree decline, soil fungi, impacts and opportunities of fuel wood extraction, and attitude of landholders to environmental issues. There are also chapters on the characteristics and status of the woodlands in each state.

The book costs \$99 from Surrey Beatty and Sons, Tel: (02) 9602 3888

Email: surreybeatty@iform.com.au

IUCN Guidelines for the Prevention of Biodiversity Loss Caused by Alien Invasive Species

SSC Invasive Species Specialist Group, IUCN, February 2000

These guidelines address four substantive concerns of the biological invasion problem: improving understanding and awareness; strengthening the management response (including prevention, eradication and control); providing appropriate legal and institutional mechanisms; and enhancing knowledge and research efforts.

Copies available from the Invasive Species Specialist Group, School of Environmental and Marine Sciences, University of Auckland (Tamaki Campus), Private Bag 92019, Auckland, New Zealand.

Tel: +64 9 3737 599 x 5210; Fax: +64 9 3737 042

Email: issg@auckland.ac.nz

Euclid: Eucalypts of south-eastern Australia CD-Rom. Revised edition.

MIH Brooker, JR Connors and AV Slee. 2000

Euclid is an interactive key and information system for the 324 'eucalypts' of south-eastern Australia, and is designed for use by anyone, from professional researchers to the novice with a basic knowledge of plants. This revised edition features an easy-to-use browser interface, and incorporates many new features making identification easier. It now also includes 12 species of *Angophora*, a genus closely related to *Eucalyptus*.

The revised edition is available to existing owners at a significantly reduced upgrade price. Published by Centre for Plant Biodiversity Research, ISBN 0 643 06575 X. CD-Rom and manual, \$130.

Available from CSIRO Publishing, PO Box 1139, Collingwood, VIC 3066. Tel: (03) 9662 7666 or 1 800 645 051; Fax: (03) 9662 7555

Email: sales@publish.csiro.au

Web: www.publish.csiro.au



Electronic Addresses

Environment Protection and Biodiversity Conservation Database

This new database is available online to help people understand the new *Commonwealth Environment Protection and Biodiversity Conservation Act* (see article, page 5), by allowing them to map their area of interest – such as a development project; identify and overlay places of national environmental significance; to find where nationally threatened species and ecological communities occur; what development projects have been proposed, and their status; and to use an online interview to apply for a permit or an application to refer the proposed action to the Commonwealth Environment Minister to decide whether approval is required (see article on page 5 of this issue).

FloraBank Discussion Groups

FloraBank announces two new email discussion groups for people involved with revegetation and Australian plant seed: REVEG and SEED. These are easy-going, general discussion groups open to any interested people in Australia.

Already there are over 100 members from mining rehabilitation, revegetation services, seedbanks, seed collectors and suppliers, community groups, landholders, government agencies, scientific and research institutions and more. This is a great way to get connected to these people and organisations.

FloraBank wants people to be better informed about collecting, storing and using native seed, to exchange information and share ideas about native seed and revegetation.

You can join these email discussion groups at the FloraBank web site:

www.florabank.org.au

or directly by sending an email to majordomo@florabank.org.au and in the body of the message type: *subscribe reveg* (to subscribe to Reveg) or *subscribe seed* (to subscribe to Seed). On the next line type the word 'end' without the quotes (to ensure that majordomo ignores your signature block if you use one).

Located at: <http://www.environment.gov.au/epbc/db/index.html>

The EPBC Act website also contains lists of public notifications and invitations to comment on proposed projects, as well as projects which have been referred and are being assessed:

<http://www.environment.gov.au/epbc/projects/projects.html>

Aliens-I listserver

This international listserver allows users to freely seek and share information on alien invasive species and issues. To subscribe, send a message to: ssc-mgr@indaba.iucn.org with the message *subscribe aliens-I* in the body of the text (note it is letter I, not number 1). Leave the subject line blank.

Conferences

Plant Form and Function: Adaptations to stress

27-29 September 2000, Nedlands, WA

This symposium will highlight recent developments in plant physiology and biology, including parasitic plants, plant ecology, nitrogen fixation and more. Costs: \$65 (standard) and \$30 (full-time student). Organised by the Dept. of Botany at the University of Western Australia.

Further information:

<http://www.botany.uwa.edu.au/info/PlantF&F.html>

Tel: (08) 9380 3838

Landscape Health in Queensland

17 & 18 November 2000

Royal Society of Queensland is convening this symposium, which will be divided into four programs covering the condition of Queensland's soils, waters, vegetation and wildlife.

For more information, contact Andrew Franks on:

Tel: (07) 3896 9565; Fax: (07) 3896 9682

Email: andrew.franks@dnr.qld.gov.au

Ecology of Insular Biotas

12-16 February 2001, Wellington, New Zealand

This international conference will focus on ecological patterns and process of particular importance to isolated biotas, including true islands,

natural habitat islands (eg. ponds) and artificial habitat islands (eg. reserves).

For scientific program inquiries contact the School of Biological Sciences, Victoria University of Wellington, PO Box 600, Wellington, New Zealand. Fax: +64 4 463 5331. Email: sbs-islands-conf@vuw.ac.nz. For other queries contact Dick Veitch, Conference Manager, Tel/Fax: +64 9 298 5775. Email: dveitch@kiwilink.co.nz

Many more details available on the website:
<http://www.vuw.ac.nz/sbs/conferences/>

Gardens 2001 Congress: Public Gardens in the 21st Century: Conservation, Culture or Crass Commercialism?

17-21 April 2001, Canberra

The Gardens 2001 Congress will seek to position Australian botanic gardens in the new millennium, exploring the areas of horticulture, plant sciences and conservation, public programs and modern management practices. The Congress will be held at the Manning Clark Centre, Australian National University, Canberra.

For more information, contact the congress secretariat: Australian Convention & Travel Services, GPO Box 2200, Canberra, ACT 2601
Tel: (02) 6257 32999; Fax: (02) 6257 3256
Email: gardens2001@ausconvservices.com.au

Courses/workshops/field work

Weedbuster Week

8-15 October 2000

More information about this national weed awareness week is available at: Email: weedbuster-week@majordomo.nre.vic.gov.au

Tel: 1800 899 444 (Conservation Volunteers)
Website: www.weedbusterweek.info.au

Voluntary Fieldwork in Kinchega National Park, NSW

October 2000-March 2001

Ken Whitney from the Center for Population Biology at UC Davis in California is looking for volunteer help with fieldwork, particularly exploring evolutionary ecology questions for the Sandhill Wattle *Acacia ligulata*. Volunteers needed for 2-8 week commitments, especially during

October and November. Food, transport and accommodation all provided.

If interested send a resumé and your available dates to kwhitney@ucdavis.edu

All About Native Seeds

5 December 2000, Kings Park, Perth, WA

For anyone involved in the rehabilitation of native plants, this seminar will provide an understanding of native seeds - their formation, collection and the relevance of provenance, storage procedures, quality, germination and viability. This will be run jointly by Botanic Gardens and Parks Authority (Formerly Kings Park & Botanic Garden) and the Centre for Land Rehabilitation. It will include a tour of the seed storage facility at Kings Park. Presenters: Dr Julie Plummer (University of WA) Dr Grant Wells, Dr Siegy Krauss, Luke Sweedman, Bob Dixon (BGPA).

Contact: Sandra Maynard, Training Officer, Centre for Land Rehabilitation, Soil Science and Plant Nutrition, The University of Western Australia, Nedlands, WA, 6907

Tel: (08) 9380 3827; Fax: (08) 9380 1050

Email: Sandra.Maynard@uwa.edu.au

Website: <http://www.clr.uwa.edu.au>

Help needed with grassland surveys

ANPC is joining forces with Friends of Grasslands to conduct a survey of rail easements between Williamsdale and Cooma (NSW) in November. The survey will be led by Rainer Rehwinkel, David Eddy, Sarah Sharp, John Briggs and Andrew Paget. Volunteers are needed to help with plant identification, data recording, transportation, compilation of results, final report and photography.

Dates: Saturdays 4th and 18th November 2000

If you'd like to help, contact Jeanette Mill, stating which tasks you can help with and on which dates, at ANPC National Office on:

Tel: (02) 6250 9509

Email: anpc@anbg.gov.au

Regional Groups

Sydney Region

Tracey Armstrong, Mount Annan Botanic Gardens

In May this year the Sydney Region Group joined the Sydney Fungal Studies Group (SFSG) on a field trip to the Lawson area in the Blue Mountains. We gathered at James Park and then meandered slowly along the Waterfall Track finding an enormous array of fungi along the way. These beautiful organisms ranged in colour from white through soft browns and golds to bright oranges and yellows, and there were even some lilac and red ones. Of course the best bit was that there were heaps of people walking next to you who could tell you what they were. There's nothing like instant gratification.

The SFSG collected specimens along the track and after the walk was finished they sorted them all out into their groups and gave them names, which made it much easier to see the variation and similarities. Ray Kearney also gave the complete amateurs (mainly the ANPC people) a brief run down on what features make up each genus, as well as which features separate them. This was very useful especially with them all laid out in front of us.

The results of the field collecting are published in the SFSG newsletter, a copy is sent to the land administrator, in this case the local council, and any of the target species of the Fungimap project are forwarded to the Royal Botanic Gardens, Melbourne.

The SFSG run field trips in autumn and early winter every year; if anyone would like any information on this group or the Fungimap project, please feel free to contact me.

Tracey Armstrong, Regional Coordinator, Mount Annan Botanic Garden, Mount Annan Drive, Mount Annan NSW 2567. Ph: (02) 4634 7939
Email: Tracey.Armstrong@rbgsyd.gov.au

NSW South West Slopes Region

Paul Scannell, Albury Botanic Gardens

1. Crimson Spider Orchid Recovery Plan

Threatened species surveys will be carried out from late August to mid October for *Caladenia concolor*. Community volunteers will be assisting

using appropriate protocol and ANPC advice. Two new sightings from the community will be investigated as well, which is great news if they are *C. concolor*. Dave Mallinson from the Australian National Botanic Gardens, Canberra will be conducting the major part of the survey.

The germination trials of seed of a similar, but as yet undescribed species have begun at the Botanic Gardens and Parks Authority (formerly Kings Park and Botanic Garden), in Perth, WA. Hopefully, results from the trials may be of use in the future for *Caladenia concolor*, if required.

Funding linked to the NSW Biodiversity Strategy and a Crown Lands weeds program have enabled works to be carried out by community volunteers and Australian Trust for Conservation Volunteer crews. These works, including weed removal, fencing and planting along the dry creek bed and the dam area will provide habitat for wildlife and minimise the impact of weeds in the Crimson Spider Orchid reserve.

In the near future, results of the controlled summer burns in Chiltern National Park will be recorded by a team from Melbourne University. Glenn Johnson of the Department of Natural Resources and Environment will be co-ordinating the survey and once again, the results will be used to assist in the management of the Crimson Spider Orchid.

2. Survey work

The National Parks Association and CARE (the Corowa Area Remnant Enhancement Living Landscapes project), are conducting a community biodiversity survey in the Lonesome Pine State Forest near Corowa, NSW, from 29th September till 2nd October 2000. The survey will involve flora and fauna experts and community volunteers, working across private land and reserves to gain the necessary information for better land management and research purposes.

The information gathered will be collated and will be of great benefit to local land managers in the surrounding areas, for management of their remnant vegetation on their farms and roadsides. For further information, or if you are interested in assisting, please contact Kylie on (02) 6033 0942.

Paul Scannell, Regional Coordinator:

Ph: (02) 6023 8241; Fax: (02) 6041 6527

E-mail: accgardn@albury.net.au

Tasmanian Region

Andrew Smith, Parks and Wildlife Service, Tasmania

Wildcare Inc., the parent organisation for the Botanical Guardians (Tasmanian ANPC Regional Group) was recently awarded the Banksia Environment Award 2000 for community groups, in recognition of its significant contribution to nature conservation. And what a contribution it has been! Members have contributed over 30,000 volunteer hours to project work since 1998, handed out \$32,000 to projects undertaken jointly with the Parks and Wildlife Service, contributing an equivalent of \$500,000 to natural and cultural heritage conservation. With a membership of 900, including around 450 Botanical Guardians, Wildcare is one of the fastest growing and largest conservation action groups in Tasmania. The Banksia Award is now sitting on the shelf next to the ANPC Silver Sponsor Certificate, which acknowledged the efforts of the Botanical Guardians and their partnership with the Parks and Wildlife Service and the ANPC.

We recently completed the third Schouten Island Gorse removal expedition. We also applied for Natural Heritage Trust funding to develop an

Adopt-a-Plant Species program to set up monitoring and action groups in the community for specific species. The Friends of the Royal Tasmanian Botanical Gardens will soon begin their Threatened Species Network funded project, helped by Botanical Guardians, to propagate and sell endangered plant species.

Wildcare has just finished running the WILD Edge Music Festival at Strahan, designed to raise awareness of the organisation and nature conservation and make a bit of money to support projects. The festival included lots of bands, a market, art exhibitions, jam sessions, workshops and a cruise to Sarah Island. There is a lot of pressure from Strahan to do it again next year.

In general terms, the listing statements for threatened orchids in Tasmania are moving towards completion. And speaking of orchids, the book "*Orchids of Tasmania*" (Jones, Wapstra, Tonelli and Harris) is now available in all the best bookstores. This book has had excellent reviews so it's worth having on your shelf.

Contact: Andrew Smith, Ph: (03) 6233 2185

Fax: (03) 6233 8308; Email: andrews@dpiwe.tas.gov.au

The Australian Network for Plant Conservation Inc. Membership List

The date in brackets indicates that the member has joined or renewed for that year. Addresses and names of contact persons are available from the National Office. *Note:* Memberships are valid for the calendar year.

Corporate Members

ACT Parks & Cons. Service (1998)
Adelaide Botanic Gardens (2000)
Albury Botanic Gardens, NSW (2000)
Alcoa of Australia Ltd, WA (2000)
Australian National Botanic Gardens (2000)
Aust Tree Seed Centre, CSIRO (1999)
Biodiversity Group, Environment Australia (2000)
Brisbane Botanic Gardens, Qld (2000)
Caloundra City Council, Qld (1998)
Centre for Plant Biodiv. Resch, ACT (2000)
Centre for Plant Conservation Genetics, NSW (2000)
Coffs Harbour City Council, NSW (2000)
Council of the City of Orange, NSW (2000)
CSIRO Publishing (2000)
Defence Estate Organisation, ACT (1998)
Dept. of Conservation and Land Management, WA (2000)
Environment ACT (1999)
Eurobodalla Bot Garden, NSW (1999)
Flecker Botanic Gardens, Qld (1999)
Forestry Tasmania (1999)
Gladstone Tindoon Botanic Garden, Qld

(1998)
Kings Park and Botanic Gardens, WA (2000)
Logan City Council, Qld (1998)
Macedon Ranges Shire Council, Vic (1999)
Maroochy Shire Council, Qld (1998)
Minerals Council of Aust, ACT (1999)
Mt Tomah Botanic Garden, NSW (1998)
Norfolk Island Botanic Garden (2000)
North Forest Products, Tas (1998)
NSW National Parks & Wildlife Service (2000)
Olympic Coord. Authority, NSW (1998)
Pacific Power, NSW (2000)
Parks and Wildlife Commission, NT (2000)
Parks Australia — North, Christmas Island (1999)
Queensland Herbarium (2000)
Queensland Parks and Wildlife Service (2000)
Randwick City Council, NSW (1998)
Redland Shire Council, Qld (1999)
RGC Mineral Sands, WA (1998)
Roads and Traffic Authority NSW (2000)
Royal Botanic Gardens, Melbourne, Vic (2000)
Royal Botanic Gardens, Sydney, NSW (2000)
Royal Tasmanian Botanical Gardens (2000)
Standing Committee on Forestry, ACT (1999)

Strathfield Municipal Council, NSW (2000)
Tas. Parks and Wildlife (1999)
Townsville City Council, Qld (1999)
WMC Olympic Dam, SA (2000)
Wollongong Botanic Gardens (2000)
Zoological Parks Board of NSW (2000)
Zoological Board of Victoria (2000)

International Associates

Auckland Plant Collections Network, NZ
Botanic Gardens Conservation Intl, UK
Botanical Research Institute of Texas
Botanischer Garten und Botanisches, Germany
David Brackett, SSC, IUCN
Canadian Botanical Conservation Network
Center for Plant Conservation, USA
Columbus Zoo, Ohio, USA (1998)
Conservatoire et Jardin Botaniques, Switzerland
Don Falk, USA
John Donaldson, National Botanical Institute, South Africa (2000)
Georgia Endangered Plant Stewardship Network, USA
David Given, NZ (2000)

Craig Hilton-Taylor, UK
 Honiara Botanic Gardens, Solomon Islands
 Indian Society for Conservation Biology
 Indonesian Network for Plant Conservation
 Clive Jermy
 Kebun Raya Indonesia
 Noelline Kroon, South Africa (1999)
 Missouri Bot. Gardens Library (1999)
 Dr Neil Mitchell, NZ (2000)
 Suresh Narayana, India
 National Botanical Institute, South Africa
 Jeanine Pfeiffer, USA
 PlantNet, UK
 Provincial Museum of Natural Sciences, Argentina
 Rare Plant Consortium, Canada
 Royal Botanic Gardens, Kew, UK (2000)
 SABONET, South Africa
 Society for Ecological Restoration, USA, (1998)
 Pritpal Soorae, IUCN/SSC, Kenya
 Mark Stanley-Price, IUCN/SSC, Kenya
 Dr I Wayan Sumantera, Indonesia
 Suva Botanical Gardens, Fiji
 Roy Taylor, Canada (2000)
 Andrew Townsend, Dept. Cons., NZ (1998)
 Marika Tuiwawa, University of the South Pacific (2000)
 Vailima Botanic Gardens, Western Samoa
 Wellington Plant Conservation Network
 Mohamed Zackeriya, Sri Lanka

Other Organisations

ARAZPA (2000)
 Assn. of Soc. for Growing Aust Plants (2000)
 Australian Arid Land Botanic Garden, SA (2000)
 Aust Assn. of Bush Regenerators (2000)
 Aust. Inland Botanic Gardens, Vic (2000)
 Aust. Plants Society Newcastle Group Inc. (2000)
 Aust. Plants Society Central West Group (1999)
 Aust. Plants Society, NSW (1999)
 Aust. Plants Society South West Slopes, NSW (2000)
 Aust. Trust for Conservation Volunteers (1997)
 Blue Mountains Wildplant Rescue Service, NSW (1999)
 Brunswick Valley Heritage Park, NSW (2000)
 Burnley College, Vic (2000)
 Burrendong Arboretum Trust, NSW (1999)
 Community Biodiversity Network (2000)
 Dept Land and Water Cons'n, NSW (2000)
 Friends of ANBG, ACT (2000)
 Friends of Eurobodalla BG, NSW (2000)
 Friends of Grasslands, ACT (2000)
 Friends of North Coast Regional BG, NSW (1999)
 Friends of Warrandyte State Park, Vic (1998)
 Greening Australia (ACT/SENSW) (1999)
 Greening Australia Ltd (2000)
 Greening Australia (NSW) (2000)
 Greening Aust Sth West Plains, NSW (1999)
 Greening Aust Sth West Slopes, NSW (1998)
 Greening Australia (Vic) (1997)
 Hunter Region Botanic Gardens, NSW (2000)
 Indigenous Flora & Fauna Assn (2000)
 Lismore Rainforest Bot. Garden (1999)
 Merri Creek Management C'tee, Vic (2000)
 Monarto Zool. Park, SA (1999)
 Myall Park Botanic Garden, Qld (1998)
 National Herbalists Assn of Aust (2000)

National Threatened Species Network (2000)
 NSW Roadside Env't. C'tee (1999)
 Olive Pink Botanic Garden, NT (2000)
 Pangarinda Arboretum, SA (2000)
 Royal Aust Institute of Parks & Recreation (1998)
 Royal Geographical Society of Qld (1999)
 Royal Zoological Society of SA (1999)
 SGAP Blue Mtns Group, NSW (2000)
 SGAP — Canberra Region Inc. (2000)
 SGAP — Dryandra Study Group (2000)
 SGAP — Far Nth Coast Gp, NSW (1998)
 SGAP — Ipswich Branch, Qld (2000)
 SGAP — North Shore, NSW (2000)
 SGAP — Northern Group, Tas (2000)
 SGAP — North West, Tas (1998)
 SGAP — Queensland Region (2000)
 Stony Range Flora Reserve, NSW (1998)
 Tasmanian Arboretum Inc. (1999)
 Trust for Nature (Victoria) (2000)
 Understorey Network, Tasmania (1997)
 Wallum Action Group, Qld (1997)
 Wildflower Society of WA (2000)
 Wildflower Society of WA, Nth Suburbs (2000)
 Wildlife Preservation Society of Australia, NSW (1999)
 World Wide Fund for Nature Australia (1999)

Individual Members

Gail Abbott, NSW (1998)
 Dr David Aldous, Vic (1998)
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